

Patent Claims

1. Composite material having an optical effect, comprising at least one moulding which essentially consists of core/shell particles whose shell forms a matrix and whose core is essentially solid and has an essentially monodisperse size distribution, where a difference exists between the refractive indices of the core material and of the shell material, and at least one further material which determines the mechanical properties of the composite.
2. Composite material according to Claim 1, characterised in that the shell in the core/shell particles is connected to the core via an interlayer.
3. Composite material according to at least one of the preceding claims, characterised in that at least one contrast material is included in the at least one moulding which essentially consists of core/shell particles, where the at least one contrast material is a pigment, preferably an absorption pigment and particularly preferably a black pigment.
4. Composite material according to at least one of the preceding claims, characterised in that the core/shell particles have a mean particle diameter in the range from about 5 nm to about 2000 nm, preferably in the range from about 5 to 20 nm or in the range 50 – 500 nm.
5. Composite material according to at least one of the preceding claims, characterised in that the difference between the refractive indices of the core material and shell material is at least 0.001, preferably at least 0.01 and particularly preferably at least 0.1.

6. Composite material according to at least one of the preceding claims, characterised in that the at least one moulding which essentially consists of core/shell particles is in the form of a layer.

5 7. Composite material according to at least one of the preceding claims, characterised in that the at least one further material which determines the mechanical properties of the composite essentially consists of polymers, preferably thermoplastic polymers.

10 8. Composite material according to at least one of the preceding claims, characterised in that the arrangement is in the form of a laminate, and the at least one further material which determines the mechanical properties of the composite can be processed at temperatures below 200°C.

15 9. Composite material according to at least one of Claims 1 to 6 or 8, characterised in that the at least one further material which determines the mechanical properties of the composite essentially consists of rubber polymers.

20 10. Process for the production of composite materials having an optical effect, characterised in that at least one moulding which essentially consists of core/shell particles whose shell forms a matrix and whose core is essentially solid and has an essentially monodisperse size
25 distribution, where a difference exists between the refractive indices of the core material and of the shell material, is strongly connected to at least one further material which determines the mechanical properties of the composite.

30 11. Process for the production of composite materials according to Claim 10, characterised in that the strong connection is effected by the action of mechanical force and/or heating.

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12. Process for the production of composite materials according to at least one of the preceding claims, characterised in that the strong connection is effected by uniaxial pressing.
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13. Process for the production of composite materials according to at least one of the preceding claims, characterised in that the strong connection is effected by casting-in or back moulding.
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14. Process for the production of composite materials according to at least one of the preceding claims, characterised in that the strong connection is processed further by thermoforming, in particular deep drawing.
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15. Process for the production of composite materials according to at least one of the preceding claims, characterised in that the strong connection is effected by coextrusion.